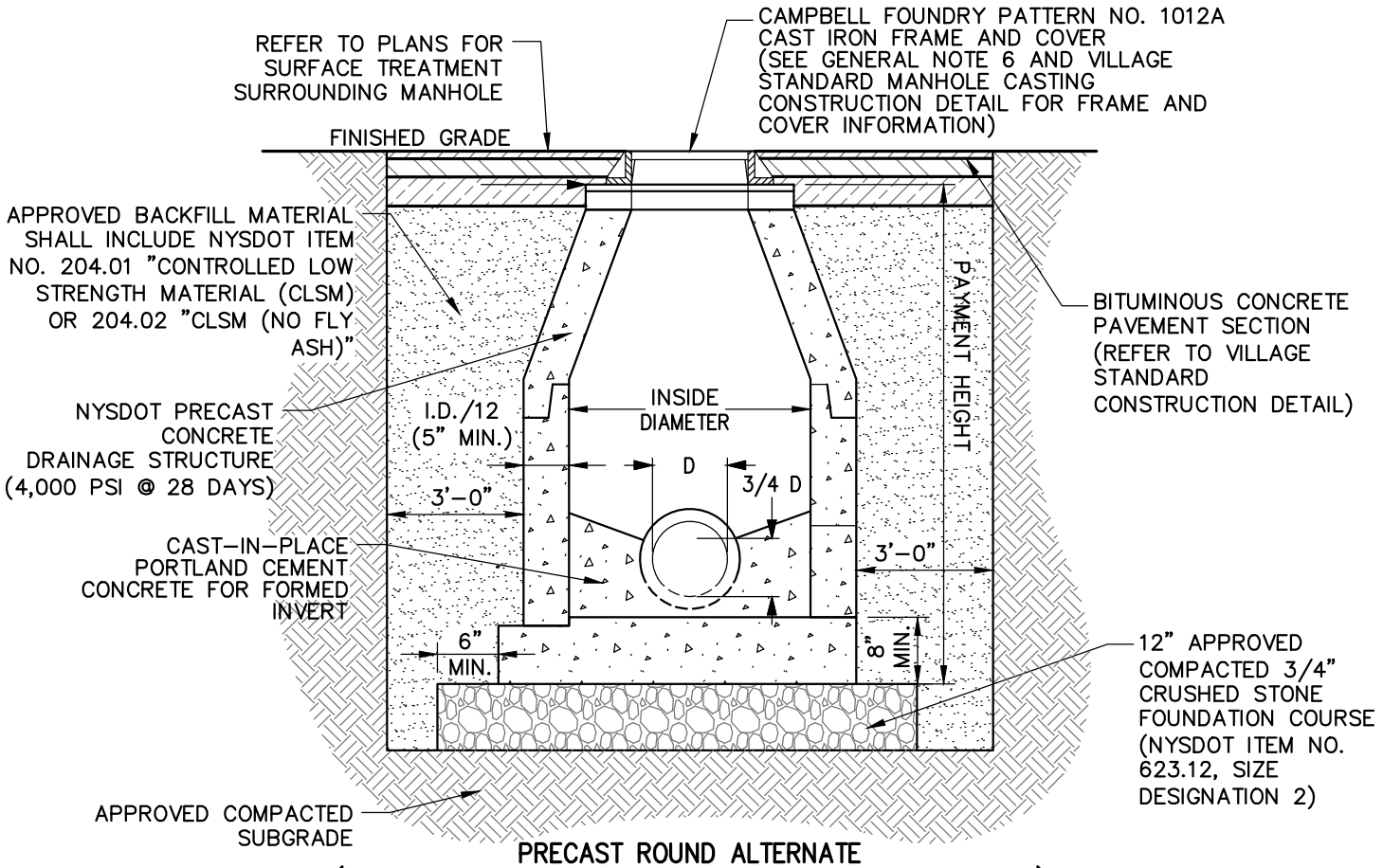
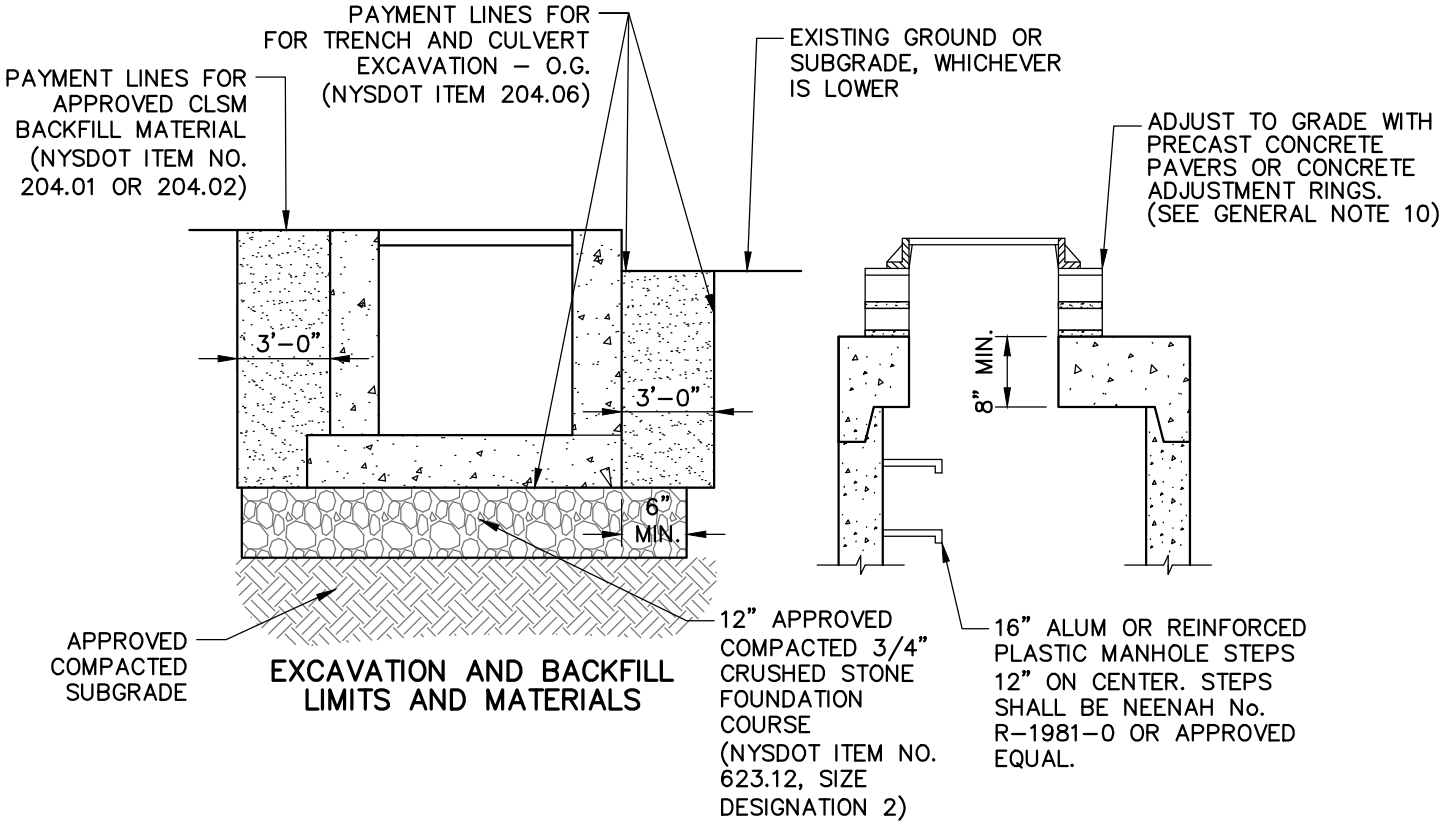


PRECAST ROUND ALTERNATE
(UNLESS OTHERWISE SPECIFIED BY THE VILLAGE ENGINEER)
ALTERNATE FLOOR SLABS SHOWN



EXCAVATION AND BACKFILL LIMITS AND MATERIALS

VILLAGE OF CROTON-ON-HUDSON STANDARD CONSTRUCTION DETAILS	**PRECAST CONCRETE DRAINAGE MANHOLE (NYSDOT ROUND STRUCTURE)**	VILLAGE OF CROTON-ON-HUDSON STANLEY H. KELLERHOUSE MUNICIPAL BUILDING 1 VAN WYCK STREET (2ND FLOOR) WESTCHESTER COUNTY VILLAGE OF CROTON-ON-HUDSON, NY 10520 PHONE: (914) 271-3775 FAX: (914) 271-2856	PROJECT: DETAILS SCALE:NOT TO SCALE DATE: 04/10/2015 SD-3C
PREPARED IN THE OFFICE OF THE COMMISSIONER OF PUBLIC WORKS	DESIGNED BY: ARC, PE CHECKED BY: ARC, PE DRAWN BY: ARC, PE VOCOH SD-3C_Precast Drainage).dwg		

SELECTION TABLES FOR ALTERNATE ROUND DRAINAGE STRUCTURES

CONCRETE OR POLYETHYLENE PIPES		STRUCTURE INTERNAL DIAMETER				
		48"	60"	72"	84"	96"
RCP H.E. RISE X SPAN	ROUND INTERNAL DIAMETER	MINIMUM ANGLE BETWEEN PIPE ENTRIES (NOTE 5)				
	12"	84	63	50	41	35
	15"	94	70	56	46	39
	18"	104	78	62	51	43
	21"	115	85	68	56	48
	24"	127	93	74	61	52
	27"	141	102	81	67	57
	30"	157	111	87	72	61
19" X 30"		157	112	88	73	62
	34"		121	95	78	66
22" X 34"			125	97	80	68
	36"		133	102	84	71
24" X 38"			140	106	87	74
27" X 42"			156	115	94	79
	42"		164	119	96	81
29" X 45"				130	104	87
	48"			140	110	92
32" X 49"				145	113	94
34" X 53"				166	123	101
	54"			175	126	104
	60"				147	117

PRECAST ROUND MANHOLES

ITEM	TYPE	CIRCUMFERENTIAL STEEL – SQUARE INCHES PER VERTICAL FOOT	INSIDE DIAMETER
604.4048	48	0.12	48
604.4060	60	0.15	60
604.4072	72	0.18	72
604.4084	84	0.21	84
604.4096	96	0.24	96

NOTES:

1. UNLESS OTHERWISE NOTED, DRAINAGE STRUCTURES SHALL MEET THE SPECIFICATIONS OUTLINED IN SECTION 604, 706–04 AND OTHER APPLICABLE SECTIONS OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, DATED JANUARY 9, 2014 WITH LATEST REVISIONS.
2. PRECAST ROUND ALTERNATE SHALL BE TYPE 48, NYSDOT ITEM NO. 604.4098 AND SHALL INCLUDE A MANHOLE FRAME AND COVER, MONOLITHICALLY POURED FLOOR SLABS AND CAST–IN–PLACE CONCRETE FORMED INVERT.
3. THE DIAMETER OF THE ALTERNATE ROUND UNIT SHALL NOT BE LESS THAN THE LARGER DIMENSION OF THE SPECIFIED RECTANGULAR UNIT IT REPLACES. IT SHALL ALSO BE LARGE ENOUGH TO HAVE THE SPECIFIED GRATE FIT WITHIN THE INSIDE DIAMETER OF THE ROUND ALTERNATE.
4. THE ABOVE VALUES ARE BASED ON THE CENTERLINE OF ALL PIPES INTERSECTING AT THE CENTER OF THE ROUND ALTERNATE.
5. THE ANGLE BETWEEN ADJACENT PIPE ENTRIES SHALL NOT BE LESS THAN THE MINIMUM SHOWN IN THE TABLE ABOVE. WHEN THE ADJACENT PIPES HAVE DIFFERENT SIZES, THE MINIMUM ANGLE SHALL BE THE VALUE FOR THE LARGER OF THE TWO PIPES.
6. THE SUM OF THE MINIMUM ANGLES BETWEEN PIPES AT THE SAME LEVEL SHALL NOT BE MORE THAN 360 DEGREES. THEY SHALL BE REGARDED AS BEING AT THE SAME LEVEL IF THEIR RISES OVERLAP.5. A BLANK (NO ENTRY) IN TABLE INDICATES THAT THE STRUCTURE IS TOO SMALL FOR PIPE OF THAT SIZE.

VILLAGE OF CROTON–ON–HUDSON
STANDARD CONSTRUCTION DETAILS

PREPARED IN THE OFFICE OF THE COMMISSIONER OF PUBLIC WORKS

PRECAST CONCRETE DRAINAGE MANHOLE (NYSDOT ROUND STRUCTURE)

DESIGNED BY: ARC, PE CHECKED BY: ARC, PE
DRAWN BY: ARC, PE VOCOH SD–3C_Precast Drainage).dwg

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PROJECT: DETAILS
SCALE:NOT TO SCALE
DATE: 04/10/2015
SD-3C

GENERAL NOTES:

1. DRAINAGE STRUCTURES SHALL BE PRECAST CONCRETE UNITS. ROUND DRAINAGE STRUCTURES SHALL BE PRECAST CONCRETE ONLY. THE CONTRACTORS SHALL SUBMIT WORKING DRAWINGS FOR REVIEW AND APPROVAL OF ANY CHANGES TO THE STRUCTURES SHOWN ON THE STANDARD SHEETS OR CONTACT PLANS, OTHER THAN MINOR CHANGES APPROVED BY THE ENGINEER. USE OF FLAT SLAB TOPS ON ROUND PRECAST UNITS SHALL REQUIRE SUBMISSION OF WORKING DRAWINGS.

2. SEE PLANS FOR ELEVATIONS, DRAINAGE STRUCTURE LOCATIONS, TYPE OF GRATE UTILIZED, LOCATION OF SCOOPS, FORMED INVERTS, SUMPS AND DRAINS.

3. REINFORCEMENT FOR RECTANGULAR DRAINAGE UNITS (CAST IN PLACE OR PRECAST) BAR REINFORCEMENT INDICATED FOR RECTANGULAR TOP SLABS, RISERS AND BASES SHALL BE GRADE 60. WIRE FABRIC FOR CONCRETE REINFORCEMENT SHALL MEET THE REQUIREMENTS OF §709-02. RISER REINFORCEMENT SHALL BE PLACED SO IT WILL HAVE A MINIMUM COVER OF 2" BUT NO MORE THAN 4" FROM THE INSIDE FACE. THE REINFORCEMENT SHALL EXTEND COMPLETELY AROUND THE DRAINAGE STRUCTURE RISER AND SHALL BE LAPPED AND TIED. BASE REINFORCEMENT SHALL BE PLACED ABOVE THE MIDPOINT OF SLAB AND SHALL HAVE A MINIMUM CONCRETE COVER OF 2".

4. ROUND ALTERNATIVE:
   WHEN SPECIFIED BY PAYMENT ITEM, THE CONTRACTOR MAY SUBSTITUTE ROUND, PRECAST DRAINAGE STRUCTURES IN PLACE OF RECTANGULAR STRUCTURES USING SIZES INDICATED IN THE "SELECTION TABLE FOR ALTERNATE ROUND DRAINAGE STRUCTURES" ON NYSDOT "DRAINAGE STRUCTURE DETAILS" STANDARD SHEET 4 OF 4. THE RISER, TOP SLAB, AND BOTTOM SLAB FOR THE ROUND ALTERNATE SHALL BE MANUFACTURED IN ACCORDANCE WITH THE PROVISIONS OF §706-04 OF THE STANDARD SPECIFICATIONS. WORKING DRAWINGS FOR THE ROUND ALTERNATES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL, UNLESS THE ROUND ALTERNATE PROPOSED HAS BEEN PREVIOUSLY APPROVED. FOR PREVIOUSLY APPROVED ROUND UNITS THE CONTRACTOR SHALL SUBMIT A COPY OF THE APPROVED DRAWINGS TO THE ENGINEER.

5. FORMED INVERTS:
   FORMED INVERTS, SCOOP AND SUMPS SHALL BE PROVIDED AND INCLUDED IN THE PRICES BID FOR DRAINAGE STRUCTURES CALLED FOR IN THE CONTRACT DOCUMENTS. WHEN NON-CIRCULARPIPES ARE USED, THE FORMED INVERT AND SUMP DETAILS SHALL BE MODIFIED TO FIT THE INVERTS.

6. COVERS:
   CASTINGS SHALL BE CAST IRON AND HAVE THE WORDS "STORM" OR "DRAIN" CAST ON THE COVER. THE COVER SHALL HAVE VENT HOLES. REFER TO THE VILLAGE STANDARD MANHOLE CASTING CONSTRUCTION DETAIL FOR ADDITIONAL INFORMATION.

7. WALL OPENINGS:
   RECTANGULAR DRAINAGE STRUCTURES SHOWN ON THE NYSDOT "DRAINAGE STRUCTURE DETAILS" STANDARD SHEETS SHOULD NEVER HAVE CORNER PIPE ENTRIES. IF PIPE ALIGNMENT WOULD REQUIRE A CORNER ENTRY, USE AROUND DRAINAGE STRUCTURE OR USE A SPECIAL DRAINAGE STRUCTURE. ALL WALL OPENINGS SHALL BE FORMED COMPLETELY THROUGH THE WALL SECTION. CIRCULAR WALL OPENINGS SHALL BE FORMED FOR EACH CIRCULAR PIPE ENTERING PERPENDICULAR TO THE WALL. WHEN NON-CIRCULAR PIPES ARE SPECIFIED, OR ROUND PIPE ENTRIES ARE SKEWED, RECTANGULAR OPENINGS MAY BE USED. THE CLEARANCE BETWEEN THE OUTSIDE OF THE PIPE AND THE OPENING SHALL BE AT LEAST 2" BUT NO MORE THAN 3". THIS CLEARANCE SHALL BE MEASURED BETWEEN THE OUTSIDE OF THE PIPE AND NEAREST POINT ON THE RECTANGULAR OPENING. IF A CORNER HAS PIPE ENTRIES ON BOTH SIDES, AND THERE IS LESS THAN 2" BETWEEN EITHER OPENING AND THE CORNER. THEN THAT SECTION OF THE DRAINAGE STRUCTURE MUST HAVE 8" THICK WALLS.

8. MONOLITHIC AND INTEGRAL BASES MAY HAVE A MAXIMUM VERTICAL DRAFT OF ½" ON ALL INTERIOR DIMENSIONS, TO FACILITATE FORM REMOVAL. FOR WALL OPENINGS THAT EXTEND THE FULL WIDTH OR LENGTH OF THE STRUCTURE, THE MINIMUM CLEARANCE BETWEEN THE OUTSIDE OF THE PIPE AND THE WALL OPENING SHALL BE 1½".

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GENERAL NOTES (CONT'D):

9. FINISHING PIPE ENTRIES:
THE BELLS OF CONCRETE PIPE SHALL BE CUT OFF AT EVERY PIPE ENTRY WHERE THE BELL ENTERS A STRUCTURE. CONNECTIONS BETWEEN THE STRUCTURE AND PIPE SHALL BE MADE BY EITHER USING A RESILIENT CONNECTOR MEETING THE REQUIREMENTS OF ASTM C1478M OR BY COMPLETELY FILLING THE SPACE AROUND EACH PIPE WITH MORTAR FOR CONCRETE MASONRY, CONCRETE GROUTING MATERIAL, OR CONCRETE REPAIR MATERIAL. THE CONTRACTOR MAY USE ALTERNATE METHODS FOR SEALING THE SPACE AROUND THE PIPE, CONTINGENT UPON SATISFACTORY RESULTS BEING OBTAINED.

10. TOP SLAB AND OR FRAME AND GRATE ADJUSTMENT:
A MINIMUM OF ½" OF BEDDING SHALL BE PLACED BETWEEN RISER AND PRECAST TOP SLABS. GRADE ADJUSTMENT FOR TOP SLABS AND/OR FRAME AND GRATE OF UP TO 2½" SHALL BE MADE WITH BEDDING MATERIAL MEETING THE REQUIREMENTS OF MORTAR FOR CONCRETE MASONRY, CONCRETE GROUTING MATERIALS OR CONCRETE REPAIR MATERIAL. GRADE ADJUSTMENT FOR TOP SLABS AND/OR FRAME AND GRATES OF UP TO 6" SHALL BE MADE WITH COMBINATION OF PRECAST CONCRETE PAVERS AND BEDDING MATERIALS. GRADE ADJUSTMENT FOR TOP SLABS AND/OR FRAME AND GRATES OF UP TO 1'–0" SHALL BE MADE WITH CAST–IN–PLACE CONCRETE OR A COMBINATION OF PRECAST CONCRETE ADJUSTMENT ELEMENTS AND BEDDING MATERIALS. ALTERNATELY, GRADE ADJUSTMENTS FOR FRAMES AND GRATES OF UP TO 2" MAY BE MADE WITH RECYCLED RUBBER ELEMENTS OR UP TO 3" WITH HDPE ELEMENTS. RECYCLED RUBBER AND HDPE ELEMENTS SHALL BE PRODUCTS APPROVED BY THE MATERIALS BUREAU AND SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. THE CONTRACTOR MAY USE ALTERNATE METHODS OF GRADE ADJUSTMENT, CONTINGENT UPON SATISFACTORY RESULTS BEING OBTAINED.

11. MANHOLE STEPS SHALL BE REQUIRED IN ALL DRAINAGE STRUCTURES DEEPER THAN 4'–0".

12. CORBELED OR CONICAL RISER SECTIONS AND FLAT SLAB REDUCERS.
ROUND PRECAST DRAINAGE STRUCTURES OR MANHOLES (WHEN ALLOWED OR SPECIFIED) MAY BE FITTED WITH CONCENTRIC OR ECCENTRIC CONICAL SECTIONS TO REDUCE THEIR DIAMETERS. PROVIDED THE USE OF SUCH DEVICES IS COMPATIBLE WITH THE DRAINAGE SYSTEM DESIGN. THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS FOR REVIEW AND APPROVAL OF FLAT SLAB REDUCERS FOR ROUND OR RECTANGULAR STRUCTURES. A WALL SECTION WITH A HEIGHT LESS THAN 6" BETWEEN THE TOP OF THE HIGHEST PIPE ENTRY AND THE BOTTOM OF A CONICAL SECTION OR FLAT SLAB REDUCER SHALL NOT BE PERMITTED.

13. WHEN PIPE LOCATIONS PROVIDE FOR LESS THAN 8" BETWEEN THE TOP OF THE UPPERMOST PIPE AND THE TOP OF THE RISER AND THE STRUCTURE MAY BE SUBJECTED TO HIGHWAY LOADS, CONTACT STRUCTURES DIVISION FOR A SPECIAL DESIGN.

14. WHEN SITE CONDITIONS REQUIRE A DRAINAGE STRUCTURE TO BE INSTALLED TO A DEPTH GREATER THAN THAT SHOWN IN THE CONTRACT DOCUMENTS, AN INSTALLATION TOLERANCE OF 8" IS PERMITTED WITHOUT REQUIRING AN INCREASE IN WALL THICKNESS OR REINFORCING STEEL AS REQUIRED BY THE DRAINAGE STRUCTURE REINFORCEMENT TABLE.

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